Wheeler, A. G., Jr. 1986. A new host association for the stilt bug *Jalysus spinosus* (Heteroptera: Berytidae). Entomological News 97: 63-65.

Wheeler, A. G., Jr. 1994. A new host for *Jalysus spinosus* (Heteroptera: Berytidae) and new host family (Commelinaceae) for stilt bugs. Entomological News 105: 201-203.

Wheeler, A. G., Jr. 1995a. Plant bugs (Heteroptera: Miridae) of *Phlox subulata* and other narrow-leaved phloxes in eastern United States. Proceedings of the Entomological Society of Washington 97: 435-451.

Wheeler, A. G., Jr. 1995b. Insects of moss phlox (*Phlox subulata*): unexpected diversity in Appalachian shale barrens. Virginia Journal of Science 46: 148 (Abstract).

Wheeler, A. G., Jr. 2001. Biology of the Plant Bugs (Hemiptera: Miridae): Pests, Predators, Opportunists. Cornell University Press, Ithaca, NY. 507 pp.

Wheeler, A. G., Jr., & T. J. Henry. 1981. *Jalysus spinosus* and *J. wickhami* (Hemiptera: Berytidae): taxonomic clarification, review of host plants and distribution, and keys to adults and fifth instars. Annals of the Entomological Society of America 74: 606-615.

Wheeler, A. G., Jr., & C. W. Schaefer. 1982. Review of stilt bug (Hemiptera: Berytidae) host plants. Annals of the Entomological Society of America 75: 498-506.

Wheeler, A. G., Jr., G. L. Miller, & T. J. Henry. 1979. Biology and habits of *Macrolophus tenuicornis* (Hemiptera: Miridae) on hayscentedfern (Pteridophyta: Polypodiaceae). Melsheimer Entomological Series 27: 11-17.

Alfred G. Wheeler, Jr.
Department of Entomology, Soils, and Plant Sciences
Clemson University
Clemson, South Carolina 29634-0315

Banisteria, Number 29, pages 35-36

OBSERVATIONS ON A MALFORMED AMERICAN BULLFROG (*RANA CATESBEIANA*) FROM FAIRFAX COUNTY, VIRGINIA -- Globally, herpetologists are concerned about amphibian population declines, extinctions, infections, and numerous reports of malformations. Most amphibians have life histories that include terrestrial and aquatic forms at different developmental stages, making them bio-indicators of both land and water health. Although malformations are not uncommon in animals, documentation of these abnormal morphologies in the literature help us better track their distribution and prevalence and can warn of potential environment problems if found in high numbers or concentrated areas. Many malformations are natural errors that occur in early development but some malformations can be linked to chemical teratogens and parasitic infections (Gilbert, 1991, Sessions, 2003). In this report, we document an American Bullfrog (*Rana catesbeiana*) with multiple malformations in its head region.

On 5 June 2006, one of us (TB) captured a female American Bullfrog (SVL 74 mm; 29 g) sitting in duckweed (*Lemna* spp.) in a shallow (1 m deep), old fish pond. The pond is located in Fairfax County, Virginia, just north of the Tre Towers Court and Braddock Road (Rt. 620) intersection (38° 52' 49.28" N, 77° 28' 47.88" W [NAD 83]). Several malformations were evident upon close visual inspection. A morphologically normal bullfrog was observed next to the malformed frog. The captured frog has the following malformations: anophthalmia (missing left eye) and missing orbit, right external nare absent, reduced tympanic ridge length on left side, asymmetry of the position of the left and right tympanic membranes, and asymmetry of left and right premaxilla and nasal bones (Fig. 1). A pigment spot (diameter 2 mm) of the same coloration as the tympanic membrane exists where the eye would normally be located. These malformations do not appear to be the result of injury or parasitic infection but rather congenital in origin. The frog was able to capture crickets and did not exhibit atypical behavior while being observed in captivity. Gross and minor motor functions appeared intact and typical for the species.

Fig. 1. Frontal view of malformed American Bullfrog showing anophthalmia and missing right external nare.

On 10-11 June 2006, the pond was revisited and searched by three people for a total of 4 h. Survey techniques included hand capture, visual encounter, terrestrial searches around the perimeter of the pond, and intensive dipnetting of the entire pond. All adult animals and tadpoles captured were examined for any anomalies and released. The following species were captured and all individuals appeared to be normal: *Terrapene carolina* (Box Turtle; n = 1), *Eumeces fasciatus* (Five-lined Skink; n = 2), *Rana catesbeiana* (n = 2), *Rana clamitans* (Green Frog; n = 1), *Acris crepitans* (Northern Cricket Frog; n = 1), *Hyla chrysoscelis* (Cope's Gray Treefrog; n = 1) and 150-200 *Rana catesbeiana*, *Rana clamitans*, and other unidentified tadpoles.

The North American Reporting Center for Amphibian Malformation (http://frogweb.nbii.gov/narcam/index.html) reports 182 American Bullfrogs with various abnormalities from the United States and Canada. Nine of these reports are for missing eyes but the causes are not described. There are no reports of bullfrogs with missing eyes from Virginia, although anophthalmia has been recorded for Virginia for other species of frogs (Mitchell, 2004). There are no reports of any amphibians with missing nostrils. Meteyer (2000) does not list this malformation for frogs and toads in her field guide to malformations of anurans, suggesting that this must be a rare or underreported malformation.

ACKNOWLEDGEMENTS

We thank Dr. Joe Mitchell, Dr. Steve Roble, and several anonymous reviewers for comments on the manuscript.

LITERATURE CITED

Gilbert, S. F. 1991. Developmental Biology. Sinauer Associates, Inc., Sunderland, MA. 891 pp.

Mitchell, J. C. 2004. Anophthalmia in an Upland Chorus Frog (*Pseudacris feriarum feriarum*) from southeastern Virginia. Banisteria 25: 53-54.

Meteyer, C. U. 2000. Field Guide to Malformations of Frogs and Toads with Radiographic Interpretations. Biological Science Report, USGS/BRD/BSR-2000-005, Madison, WI. 18 pp.

Sessions, S. K. 2003. What is causing deformed amphibians? Pp. 168-186 *In* R. D. Semlitsch (ed.), Amphibian Conservation. Smithsonian Institution Press, Washington, D.C.

Jason D. Gibson
Galileo Magnet High School
Danville, Virginia 24541

Tony Bulmer
Ellanor C. Lawrence Park
Fairfax County Park Authority
5040 Walney Road
Chantilly, Virginia 20151

John White
2815 N. Van Buren Street
Arlington, Virginia 22213

Banisteria, Number 29, pages 36-38

MESSAGE FROM A PEAT BANK: FIRST RECORD FOR THE EASTERN MUD TURTLE (*KINOSTERNON SUBRUBRUM SUBRUBRUM*) FROM COBB ISLAND, VIRGINIA -- Conant et al. (1990) summarized all known amphibian and reptile species of the Virginia barrier islands based on historical, museum, and personal records. Brannon et al. (2001) added observations on four species of reptiles from Myrtle and Ship Shoal islands and Roble (2001) added the Leatherback Sea Turtle to the list for Hog Island. These islands are geologically dynamic and well known to shift geographic position over time (Dolan et al., 1979; Mitchell & Anderson, 1994). Fresh water occurred on some of the islands historically but only a